TD-STF-SOP-003
June 21, 1999
Baseline

FOD PREVENTION PLAN
FOR THE
X-33 FLIGHT LIQUID HYDROGEN TANK
TEST PROGRAM
AT MSFC

TD-STF-SOP-003
June 21, 1999

APPROVAL:

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Chris Shepherd/QS10 — 6-22-99 Date

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Bill Townsend/XMSW — 6/23/99 Date

1.0 PURPOSE

To establish a program at MSFC for FOD prevention for the X-33 flight hydrogen tank cryostructural test. This plan was developed to implement the requirements of the X-33 FOD program.

2.0 SCOPE

This plan will be used for activities "inside the gate" at the Structural Test Facility (4699) in the West Test Area.

3.0 APPLICABILITY

This plan applies to all MSFC and contractor personnel involved in installation, test preparation, test and post test activities. Portions of this plan will apply to official visitors.

4. APPLICABLE DOCUMENTS

EP91-9003 Test Preparation Sheet (TPS) Implementation Instruction

EP91-007 Facility Nonconformance Reporting System for the Propulsion Test Area

604D0032 LMSW X-33 FOD Prevention Plan

5. DEFINITIONS

FOD: an acronym for Foreign Object Damage and Foreign Objects and Debris.

Foreign Object Damage: is defined as any damage that is caused by a foreign object, such as impact damage from a tool being dropped on to an exterior surface of the test article.

Foreign Objects and Debris: is defined as items which are left in or around the test article, including tools and leftover materials used in processing or preparing the test article or facility for test.

FOD Critical Area: anywhere inside the doors to the 4699 enclosure or above the tank.

6. INSTRUCTIONS

a. All personnel having regular access to the enclosure for the test article (tank) at 4699 will have FOD training. The training will be provided by LB&B Safety, who will issue badge stickers to personnel who have completed the training. The employee Personal Commitment Form will be signed and maintained by LB&B Safety.
b. Visitors will be strictly controlled. Visitors will have a short FOD briefing prior to entry into FOD critical areas, and will be escorted at all times by trained personnel.
c. A set of tools for use by LB&B mechanical will be purchased specifically for this project. These tools will be marked, and inventory will be controlled by the LB&B tool control personnel. Tools, meters and other equipment will be issued by signing out and will be returned as soon as the job is complete. The Structures and Dynamics Test Group (ED27) will sign their tools and supplies in and out at the specified entry point to 4699.
d. Tools will be tethered while working in FOD critical areas. Only tools specifically issued for the job will be in the area. Radios, cameras and meters will also be tethered. Taglines will be attached to any large items lifted by the crane.
e. Tools will be removed from the FOD critical area during lunch and break. Tools will be turned in at end of shift and re-issued for the next shift.
f. Safety wire cutters that will be used during test setup operations will have an adhesive medium attached.
g. Miscellaneous small parts (MSP), such as fasteners, will be inventoried for the job and enclosed in a specially designed tray or bag for transfer into the FOD critical area. Solvent will be transferred in small containers and wipes and other consumables will be inventoried.
h. The dress code will be as follows: The empty pocket rule will apply. Containers will be available at the test stand for this purpose. Jewelry, including watches, rings, and bracelets will be removed. If a watch is required, it will be taped. Chin straps on hard hats will be used. Hard hats will not be worn when working above the tank except during lifting operations. Badges will be removed and placed on a badge board. Belt buckles will be taped. If standing on the tank is required, socks or booties will be issued to cover shoes. Eyeglasses will be tethered.
i. Good housekeeping will be maintained at all times. FOD containers will be provided on each level and emptied at the end of the shift by personnel working in the area.
j. A pre- and post-shift walkdown will be performed by any combination of quality, safety and lead personnel to inspect for compliance and verify the tank has not been damaged. An Inspection Log will be maintained at the test stand by QA.
k. Quality, safety and lead personnel will do periodic audits to ensure compliance.
l. FOD will be reported on the FOD Report. The report will be attached to a QTPS. All personnel are encouraged to take an active role in preventing and reporting FOD. FOD will be reported as soon as possible to quality, safety, or lead personnel.

TD-STF-SOP-003

FOD INSPECTION LOG

DATE	TIME	SIGNATURE

TD-STF-SOP-003

X-33 LIQUID HYDROGEN FLIGHT TANK STANDARD OPERATING PROCEDURE FOREIGN OBJECT DAMAGE/DEBRIS PREVENTION

EMPLOYEE PERSONAL COMMITMENT

I have been instructed in and understand the requirements for FOD prevention and reporting as detailed in STF-SOP-003, "FOD Prevention Plan for the X-33 Flight Liquid Hydrogen Tank Test Program at MSFC."

Signature _____

Printed Name _____

Date _____

Employed by _____

Sign and return this form to LB&B Safety.

FOD REPORT

Instructions: This form should be used to document and report the discovery of FOD items that are discovered during End-Of-Shift and other FOD inspections. Tools and other identified items which are traceable to an individual should be documented and reported on a Found Item Report.

DATE: _____ SHIFT: _____ TIME: _____ ☐ AM ☐ PM

AREA: X^{33} VEHICLE ☐ X^{33} Assembly Area ☐ TOOL BOX AREA ☐ OTHER (SPECIFY BELOW) ☐

OTHER _____

DETAIL LOCATION WHERE FOUND _____

TYPE AND QUANTITY OF ITEMS _____

SUPERVISOR'S CORRECTIVE ACTION STATEMENT: _____

SIGNATURE
MANAGER - MANUFACTURING _____ DATE _____

SIGNATURE
MANAGER - QUALITY ASSURANCE: _____ DATE _____

COMPLETED FORMS WILL BE MAINTAINED ON FILE BY QUALITY ASSURANCE

FORM NUMBER 604D0032-4